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09/617,736	07/17/2000	Ping Xie	13837-037001	8309

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EXAMINER

WOOD, KEVIN S

ART UNIT PAPER NUMBER

2874

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/617,736

Applicant(s)

XIE ET AL.

Examiner

Kevin S Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-11 and 13-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-29 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 13-20 and 30-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9, 19.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Brian Healy

## **DETAILED ACTION**

### ***Response to Amendment***

1. This office action is responsive to Amendment C filed 3/5/03. Claims 1, 8, 15, 21, 22 and 31 are amended in Amendment C. No new claims are added and no claims are canceled. Claims 1-4, 6-11 and 13-35 are still pending in the application.
2. Based on the applicant's amendment, the rejections of claims 22-29, 31 and 32 under 35 U.S.C 112, second paragraph, have been withdrawn. Also based on the applicant's amendment, the objection to the drawings is withdrawn.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-4, 6-11 and 13-35 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 7-10, 14-17, 20 and 30-35 are rejected under 35 U.S.C. 102(b) as being anticipated by European Patent Application No. 0725289 to Takahashi.

Referring to claim 1, Takahashi discloses all the limitations of the claimed invention. Takahashi discloses a method for improving the extinction ratio of

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polarization maintaining (PM) fibers, including: providing a plurality of PM fibers (15, 16, 17, 18), the PM fibers each having corresponding principal axes (i.e. the axes X1-X1, X2-X2, Y1-Y1, and Y2-Y2, and X-X, and Y-Y shown in figures 2 and 5); disposing the plurality of PM fibers beside one another as a grouping, the grouping having corresponding secondary axes; and aligning each of the plurality of PM fibers such that the corresponding principal axes of each of the plurality of PM fibers and the secondary axes of the grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of the fibers in the grouping. See Figures 2 and 5, and col. 7, line 14 – col. 8 line 38, and col. 11, line 32 – 39).

Referring to claims 2, 3 and 7, Takahashi discloses all the limitations of the claimed method. Takahashi discloses (in figures 2 and 5) fibers with a stress applying part (i.e. fibers with a core and two parallel hollow stress applying cladding parts) and the principal fiber axes intersect with the axes of the grouping at angles of approximately 0° and 90°.

Referring to claim 8, Takahashi discloses all the limitations of the claimed invention. Takahashi discloses an apparatus which improves the extinction ratio of of a grouping of polarization maintaining (PM) fibers, including: a plurality of PM fibers (15, 16, 17, 18), the PM fibers each having corresponding principal axes (i.e. the axes X1-X1, X2-X2, Y1-Y1, and Y2-Y2, and X-X, and Y-Y shown in figures 2 and 5); the plurality of PM fibers disposed beside one another as a grouping, the grouping having corresponding secondary axes; and whereby each of the plurality of PM fibers is aligned such that the corresponding principal axes of each of the plurality of PM fibers and the

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secondary axes of the grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of the fibers in the grouping. See Figures 2 and 5, and col. 7, line 14 – col. 8 line 38, and col. 11, line 32 – 39).

Referring to claims 9, 10 and 14, Takahashi discloses all the limitations of the claimed invention. Takahashi discloses (in figures 2 and 5) fibers with a stress applying part (i.e. fibers with a core and two parallel hollow stress applying cladding parts) and the principal fiber axes intersect with the axes of the grouping at angles of approximately  $0^\circ$  and  $90^\circ$ .

Referring to claim 15, Takahashi discloses all the limitations of the claimed invention. Takahashi discloses an apparatus which improves the extinction ratio of of a grouping of polarization maintaining (PM) fibers, including: a plurality of PM fiber means (15, 16, 17, 18), the PM fiber means each having corresponding principal axes (i.e. the axes X1-X1, X2-X2, Y1-Y1, and Y2-Y2, and X-X, and Y-Y shown in figures 2 and 5); the plurality of PM fiber means disposed beside one another as a grouping, the grouping having corresponding secondary axes; and whereby each of the plurality of PM fiber means is aligned such that the corresponding principal axes of each of the plurality of PM fiber means and the secondary axes of the grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of the fiber means in the grouping. See Figures 2 and 5, and col. 7, line 14 – col. 8 line 38, and col. 11, line 32 – 39).

Referring to claims 16, 17 and 20, Takahashi discloses all the limitations of the claimed invention. Takahashi discloses (in figures 2 and 5) fibers with a stress applying

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part (i.e. fibers with a core and two parallel hollow stress applying cladding parts) and the principal fiber axes intersect with the axes of the grouping at angles of approximately 0° and 90°.

Referring to claims 30-35, Takahashi discloses all the limitations of the claimed invention and method. Takahashi discloses the fibers being fixed with epoxy (see col. 8, lines 10-22). The alignment of the fibers is not disturbed during or after curing of the adhesive. Therefore the light traveling through the fibers maintains its polarization direction throughout the curing process of the epoxy.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 4, 6, 11, 13, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application No. 0725289 to Takahashi.

Referring to claims 4, 11 and 18, Takahashi discloses all the limitations of the claimed invention, except Takahashi does not appear to disclose that the polarization maintaining fibers may be PANDA fibers. It is clear that the method and apparatus disclosed by Takahashi would have the same effect of improving the extinction ratio if another type of polarization maintaining fiber were used. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a PANDA fibers since it was known in the art that PANDA fibers have polarization maintaining characteristics.

Referring to claims 6, 13 and 19, Takahashi discloses all the limitations of the claimed invention, except Takahashi does not appear to disclose that the polarization maintaining fibers may be BOWTIE fibers. It is clear that the method and apparatus disclosed by Takahashi would have the same effect of improving the extinction ratio if another type of polarization maintaining fiber were used. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a BOWTIE fibers since it was known in the art that BOWTIE fibers have polarization maintaining characteristics.

***Allowable Subject Matter***

9. Claims 21-29 are allowed.

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10. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claims 21-29, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose a polarization beam splitter/combiner including, a body having a single mode fiber and a pigtail pair each optically coupled to the body, where the pigtail pair comprises a plurality of polarization maintaining (PM) fibers, the fibers having a principal and secondary axes.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (703) 605-5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.



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KSW

August 12, 2003

A handwritten signature in black ink, appearing to read "Brian Healy". The signature is fluid and cursive, with the first name "Brian" written in a more compact, rounded style and the last name "Healy" written in a more elongated, flowing style.

Brian Healy  
Primary Examiner